

METU, Department Of Computer Engineering
Graduation Project
Proposal Form

(Please read carefully, and follow the instructions to prepare the project proposal form.)

(Instructions to fill in this form are given in italic fonts and in parentheses.)

(To provide an input for a section of the form, delete the instruction and provide your input in place of the deleted instruction. In the final form that you will submit, there shouldn't be any instructions left over, including this section of the form.)

(If you feel that a particular instruction is not relevant to your project proposal, please use a proper explanation for this, rather than ignoring the instruction.)

(The final form should not exceed 4 pages, excluding this page and including the References section. Please use Arial, Normal, 10pt fonts and single line spacing.)

Important Notes

A project could be proposed by (i) a student group, (ii) a company, or (iii) a faculty member of the department by filling in this form and submitting it to 49x-proposal@ceng.metu.edu.tr by e-mail. For a project proposal, there might be a sponsoring company supporting the project and providing some form(s) of resources for the project.

If your proposal might contain a patentable idea or any type of intellectual property, please first make sure to follow appropriate steps (apply for a patent, etc.) before sending your idea to us. Once this form is received from you, the instructor(s) and the department has no responsibility regarding to intellectual properties of your project/idea.

All sources and documentation developed for this course are assumed to be public domain (GPL, CC or similar license) by default. If you need any exception for license and disclosure of project work, please specify this in detail in IP section of the form.

Please note that source codes, documents and issue tracking should be kept in department servers. No restrictions can be requested for limiting faculty and assistants access to student work.

Project Information

Title

Smart Refrigerator

Target

Public Restricted

(If you would like to restrict your project idea to one or more groups, please mark "Restricted" and state the group or groups eligible for the project.)

Proposer Information

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IP (Intellectual Property) Information

All content of this project belongs solely to the implementor group. The source files and databases will be shared only with Faculty professors and assistants. When the project is finalized, making it open source will be considered.

Project Description and Background Information

Description

The project aims to develop a helpful application which communicates with the smart refrigerator. The refrigerator will have weighing scales which will be used to update the food database. The application will allow the users to attach food names to these small weighing scales and will alert the user about remaining amount of food and the expiration date. The application will also be a good assistant by suggesting recipes according to the food in the refrigerator. Multiple users will be able to register to the same refrigerator through creating accounts. The users that are registered to the same refrigerator will be able to keep track of food and get notifications based on the changes in the food amount.

Similar Products/Projects

LG Smart ThinQ: This refrigerator has a Wi-Fi enabled LCD touchscreen that you can use to control your refrigerator, check the weather and track when food expires.

Samsung Refrigerator with WiFi

Justification of the proposal

The **purpose** of the project is to make the time spent in the kitchen less and more productive. We have observed that every day people spend a lot of hours in the kitchen for cooking and a lot of time is lost when they realize there aren't enough supplies in their refrigerator. Also, a lot of people have supplies in their refrigerator but don't know what they can cook with it. Through our project we aim to find a solution to this daily problem. After the development is finalized, the project will solve the problem of not knowing the supplies the refrigerator has inside of it and time lost into figuring it out and having to leave the kitchen again. Also in the project, several recipes will be suggested to the users based on its content and this will help users to figure out what they can cook and even learn new recipes. Basically with this project, we will solve the problem of now being aware of the content of the fridge and even when known, not knowing what to do with that content.

Contributions, Innovation and Originality Aspects of the Project

Currently, there are several smart refrigerators that can store existing food information, connect to Wi-Fi, synchronize with mobile application and suggest recipes to user. However, all of the existing products use databases updated manually by users. Through this project, the database will receive the information by itself and not through the users updating it. This project aims to make refrigerators more practical and user-friendly. This project is expected to develop existing refrigerators by providing automatic update of food database when the refrigerator runs out of a specific food or the food amount increases or decreases. Through the login interface and accounts, users will be able to reach the database through different devices.

Technical Aspects of the Project

Users access cloud computing using mobile application and Ethernet enabled device which is our smart refrigerator. Users gain access to application software and databases.

Targeted Output, Targeted User/Domain Profile

Targeted end-products are as follows:

- A refrigerator that measures and sends the weight of the food to the database.
- A mobile application that receives information about stored food from the database.
- A database that includes 50+ recipes, the common food names and information of existing food that can be increased manually by the user.

Our project will be successful when the targeted users will spend 10-15% less time in the kitchen.

The end product targets every individual who is responsible from grocery shopping to cooking.

Project Development Environment

Hardware: WiFi connected weighing scales, a refrigerator (if any sponsorship will be found)

Software: Since this is an Internet of Things project Object Oriented Programming languages will be used. For the mobile part of the project Android development tools will be used.

For the project development methods, we will use Scrum methodology. Also we will use SWOT Analysis to identify the Strength, Weaknesses, Opportunities and Threats of our project and improve it by time.

External Support

We will need the following support for our project:

- An Android mobile device (phone, tablet etc.)
- Cloud enabling weighing scales (weighing scales can be modified to connect cloud)

Turkish kitchen appliances brands will be contacted for sponsorship for the refrigerator and the project itself.

We will ask one of our Faculty members for support. If sponsorship found, a company representative will be consulted as well.

References

<http://mashable.com/2013/01/12/samsung-smart-fridge-recipes/#106Jlb81Ssqo>
<http://www.lg.com/us/refrigerators/lg-LFX31995ST-french-3-door-refrigerator>
<https://itunes.apple.com/us/app/lg-smart-refrigerator/id573834071?mt=8>